

# Rate and Risk Factors for Contralateral Slipped Capital Femoral Epiphysis in Adolescents Treated with Slipped Capital Femoral Epiphysis: A Comprehensive National Database Study

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## INTRODUCTION:

While in-situ pin fixation remains the gold standard treatment for acute presentation of slipped capital femoral epiphysis (SCFE), the contralateral hip remains at an increased risk for subsequent development of SCFE. In addition, there is not enough literature to suggest what factors are involved in the pathophysiology of the contralateral hip. The purpose of the study was to report the rate and risk factors for subsequent contralateral slipped capital femoral epiphysis based on the national database of adolescents with unilateral SCFE in the long term.

**METHODS:** A retrospective cohort study using data from the US Collaborative Network in TriNetX. Skeletally immature adolescents diagnosed with SCFE who underwent surgery between January 2013 and March 2022 were included. An event rate analysis was used to determine the incidence and timeframe of subsequent contralateral SCFE. Variables associated with contralateral SCFE were identified using adjusted odds ratios (ORs).

## RESULTS:

Our study included 1,767 adolescents with primary unilateral SFCE, followed up for at least 5 years or occurrence of contralateral SCFE. Of these, 226 (12.8%) developed subsequent contralateral SFCE, with an estimated cumulative incidence of 18.1%. Low free T4 (less than 1 or 0.8 by age) (OR=2.11, P=0.02), DM (OR=1.83, P=0.02), low Calcifediol (<30 ng/mL) (OR=11.4, P=0.02), and severe obesity (BMI > 120% of the 95th percentile or greater than 35 kg/m<sup>2</sup>) (OR=1.51, P=0.048) were significantly associated with an increased risk of developing contralateral disease. However, we did not observe significant associations with race, age, or laterality.

## DISCUSSION AND CONCLUSION:

The present study identified low free T4, diabetes mellitus, low Calcifediol, and severe obesity as risk factors for developing contralateral SCFE. While previous studies suggest endocrine pathologies pose an increased risk of developing SCFE, the results from the present study validate previous literature and further suggest that low vitamin D levels may play a more significant role in the pathophysiology of SCFE than age. Future studies should focus on understanding the mechanism leading to slippage in order to improve treatment plans and outcomes in patients.

Adjusted Odds Ratios				
Event	OR	Lower	Upper	P-Value
White	1.241	0.792	1.536	0.064
Female	1.186	0.693	1.632	0.754
Hispanic or Latino	0.821	0.514	1.125	0.12
Black or African American	0.741	0.578	1.094	0.159
Male	0.919	0.695	1.223	0.411
Thyroxine, Free [Mass/volume]	2.1052	1.1252	4.3631	0.0192
Diabetes mellitus	1.825	1.0423	2.813	0.0216
Calcidiol [Mass/volume] <30	11.4	1.65	89.2	0.0223
Obesity	1.642	1.1203	2.822	0.0461
Severe Obesity	1.511	1.0012	2.1923	0.04821

